

199S Division of Atomic, Molecular,
and Optical Physics Annual Meeting
Toronto, Ontario, Canada
16-19 May 199S

Abstract

A Novel Approach to Measuring Inelastic Differential Cross Sections for Electron-Molecule Collisions - L.R. LeCLAIR, S. TRAJMAR, M.A. KHAKOO, and J.C. NICKEL, *JPL, Pasadena, CA.* The absolute measurement of inelastic differential cross sections (DCS's) for electron-molecule scattering presents a problem at low residual energies. It usually requires a precise knowledge of the overall instrument response function and scattering geometry, which are difficult to obtain at best. We have recently investigated a new approach to this problem. This was done by replacing an electron energy analyzer with a specially constructed field free drift tube terminated by a 40 mm dia. multi-channel plate. "time-of-flight (TOF) spectra of electrons scattered from the target molecule are obtained by pulsing the electron beam (10⁻¹¹ S). The inelastic to elastic scattering intensity ratios obtained from the TOF spectra represent the corresponding DCS ratios. From well established elastic DCS's one then obtains inelastic DCS's which can serve as secondary standards for normalizing relative inelastic DCS's obtained in conventional crossed beam scattering experiments. Our preliminary results for CO are promising, and we hope to present measurements for He and Xe as well.

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